NON-PUBLIC?: N
ACCESSION #: 9512110067
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Surry Power Station, Unit 2 PAGE: 1 OF 5

DOCKET NUMBER: 05000281

TITLE: Reactor Trip Due to Failed Reactor Coolant Pump Motor
EVENT DATE: 11/07/95 LER #: 95-007-00 REPORT DATE: 12/04/95

OTHER FACILITIES INVOLVED: Surry Unit 1 DOCKET NO: 05000280

OPERATING MODE: N POWER LEVEL: 100%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: D. A. Christian, Station Manager TELEPHONE: (804) 357-3184

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: AB COMPONENT: P MANUFACTURER: W120
REPORTABLE NPRDS: Yes

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On November 7, 1995, Unit 2 was operating at 100% power. At 0956 hours, a reactor coolant low flow signal on one out of three loops caused a reactor trip, The low flow signal was caused by the automatic opening of the Reactor Coolant Pump (RCP) Breaker 25C3 due to a phase to ground fault in the RCP C motor.

Appropriate operator actions were taken in accordance with emergency operating procedures to verify the performance of system automatic actions. The unit was quickly brought to a stable, no-load condition. Therefore, the health and safety of the public were not affected at any time during this event.

A Root Cause Evaluation investigation was initiated to determine the cause of this event and to recommend corrective actions. Investigations at the pump motor terminals determined that the internal motor stator windings were grounded. The failed motor is being sent offsite to

determine the cause of the grounded condition.

The NRC was notified pursuant to 10 CFR 50.72 (b)(2)(ii) on November 7, 1995 at 1240 hours. This report is being submitted pursuant to 10 CFR 50.73 (a)(2)(iv) as an automatic actuation of the Reactor Protection and Auxiliary Feedwater Systems.

END OF ABSTRACT

1.0 DESCRIPTION OF THE EVENT

On November 7, 1995, Unit 2 was operating at 00% power. At 0956 hours, a reactor coolant low flow signal on one out of three loops caused a reactor trip. The low flow signal was caused by the automatic opening of the Reactor Coolant Pump (RCP), 2-RCP-P-1C, EIIS-AB-P! Breaker 25C3, due to a phase to ground fault in the RCP C motor. Based on inherent circuit time delays, the ground relay for the RCP C breaker received both time and instantaneous actuations.

The control rods EIIS-AA! inserted into the core as designed. The Auxiliary Feedwater (AFW) pumps EIIS-BA-P! started on low-low Steam Generator (SG) water level and provided flow to the SGs. The Anticipated Transient Without Scram Mitigation System Actuation Circuitry (AMSAC) armed and initiated as designed. The Reactor Coolant System (RCS) reached a minimum temperature of approximately 547 degrees F and stabilized. The reactivity shutdown margin was calculated following the RCS cooldown to verify that Technical Specification and administrative shutdown margin limits were satisfied.

The following were noted during the post-trip response:

o The Main Steam Reheater EIIS-SB-RHTR! Control System initially would not reset.

o Condensate Polishing Building Bypass Valve, 2-CP-AOV-222, EIIS-KD-V!, would not close when attempting to place the Condensate Polishing Building in service in accordance with Emergency Operating Procedure 2-ES-0.1, Reactor Trip Response.

o The illumination of the Individual Rod Position Indication (IRPI) EIIS-AA-ZI! for Control Rod M-10 was delayed.

o One of the main steam dump valves, 2-MS-TCV-206A, EIIS-SB-TCV! did not automatically open to admit steam to the main condenser.

The NRC was notified pursuant to 10 CFR 50.72 (b)(2)(ii) on November 7, 1995 at 1240 hours. This report is being submitted pursuant to 10 CFR 50.73 (a)(2)(iv) as an automatic actuation of the Reactor Protection (RPS) EIIS-JC! and AFW Systems.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

This event resulted in no safety consequences or implications. Appropriate operator actions were taken in accordance with emergency operating procedures to verify the performance of system automatic actions and to respond to abnormal conditions. The unit was quickly brought to a stable, no-load condition. Therefore, the health and safety of the public were not affected at any time during this event.

3.0 CAUSE OF THE EVENT

The Root Cause Evaluation (RCE) process was initiated on November 7, 1995 to determine the cause of this event and to recommend corrective actions. Investigations at the pump motor terminals determined that the motor stator windings were grounded. The failed motor is being sent offsite to identify the cause of the grounded condition and to receive subsequent refurbishment.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

Following the reactor trip, Control Room Operators acted to maintain the unit in a safe, shutdown condition in accordance with emergency and other operating procedures.

The Shift Technical Advisor monitored the critical safety function status trees to verify that plant parameters remained acceptable.

Station management conducted a post trip review and debriefing at 1600 hours on November 7, 1995. No safety, regulatory, or personnel performance concerns were identified by this review.

The RCE and troubleshooting activities were initiated to determine the cause of breaker 25C3 opening.

5.0 ADDITIONAL CORRECTIVE ACTION(S)

A replacement RCP motor was installed on November 13, 1995. The failed motor is being sent offsite for repairs. A root cause team has been established to determine the cause of the fault.

The ground relay for the RCP C breaker was tested and had a calibration check performed. The As Found settings were within tolerance and the relay was reset and tested satisfactorily. Based on inherent circuit time delays, both time and instantaneous actuations were received.

The moisture separator reheater system supply motor operated valves were closed in accordance with Emergency Operating Procedure, 2-E-0, Reactor Trip or Safety Injection. The reheater flow control valves subsequently closed when the reset relay was agitated. The reset relay was replaced.

The Condensate Polishing Building Bypass Valve, 2-CP-AOV-222, was repaired by work order. It was determined that the solenoid for this valve would not energize due to an open coil. The solenoid was replaced and satisfactorily tested.

A hot rod drop test was conducted which verified that Control Rod M-10 is fully operable. The IRPI for Control Rod M-10 has exhibited a slow response following reactor trips for several years. Engineering and vendor personnel have evaluated this condition and several actions were implemented during this outage to provide supplemental rod bottom indication for IRPI M-10.

Testing on the main steam dump valve, 2-MS-TCV-206A, determined that it contained a failed solenoid. This solenoid was replaced and satisfactorily tested.

6.0 ACTIONS TO PREVENT RECURRENCE

A review of the inspection and work history for the motor was conducted. Work history information confirmed that the motor was inspected and maintained in accordance with vendor's recommendations. The motor was satisfactorily inspected during the February 1995 refueling outage. The motor was last refurbished in June 1991 and was scheduled to be refurbished during the upcoming

refueling outage. The cause of the motor failure will be evaluated and additional corrective action taken if warranted.

7.0 SIMILAR EVENTS

On June 22, 1988, while Unit 2 was in cold shutdown, the RCP breaker tripped on instantaneous overcurrent and instantaneous overcurrent to ground. The trip was the result of a grounded motor stator coil, probably due to normal wear and aging. This event was not reportable and was documented through the deviation report system.

8.0 MANUFACTURER/MODEL NUMBER

RCP motor serial number 2S-77P314
Manufacturer: W120 Westinghouse
Model Number: W-11001-Al

9.0 ADDITIONAL INFORMATION

Unit 1 was operating at 100% power and was not affected by this event.

ATTACHMENT TO 9512110067 PAGE 1 OF 1

10CFR50.73

Virginia Electric and Power Company
Surry Power Station
5570 Hog Island Road
Surry, Virginia 23883

December 4, 1995

U. S. Nuclear Regulatory Commission Serial No.: 95-619
Document Control Desk SPS:VLA
Washington, D. C. 20555 Docket No.: 50-281
License No.: DPR-37

Dear Sirs:

Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to Surry Power Station Unit 2.

REPORT NUMBER

50-281/95-007-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Management Safety Review Committee for its review.

Very truly yours,

D. A. Christian
Station Manager

Enclosure

pc: Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

M. W. Branch
NRC Senior Resident Inspector
Surry Power Station

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